

U. S. DEPARTMENT OF AGRICULTURE,

BUREAU OF SOILS—MILTON WHITNEY, Chief.

IN COOPERATION WITH THE NORTH CAROLINA DEPARTMENT OF AGRICULTURE,
W. A. GRAHAM, COMMISSIONER; B. W. KILGORE, STATE CHEMIST AND
DIRECTOR OF AGRICULTURAL EXPERIMENT STATION;
C. B. WILLIAMS, AGRONOMIST.

SOIL SURVEY OF DAVIDSON COUNTY,
NORTH CAROLINA.

BY

R. B. HARDISON, OF THE U. S. DEPARTMENT OF AGRICULTURE
IN CHARGE, AND L. L. BRINKLEY, OF THE NORTH
CAROLINA DEPARTMENT OF AGRICULTURE.

W. EDWARD HEARN, INSPECTOR, SOUTHERN DIVISION.

[Advance Sheets—Field Operations of the Bureau of Soils, 1915.]



WASHINGTON:
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1917.

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LETTER OF TRANSMITTAL

U. S. DEPARTMENT OF AGRICULTURE,
BUREAU OF SOILS,
Washington, D. C., August 28, 1916.

SIR: In the extension of the soil survey in the State of North Carolina during the field season of 1915 a survey was undertaken in Davidson County. This work was done in cooperation with the State of North Carolina and the selection of the area was made after conference with State officials.

I have the honor to transmit herewith the manuscript report and map covering this work and to request their publication as advance sheets of Field Operations of the Bureau of Soils for 1915, as authorized by law.

Respectfully,

MILTON WHITNEY,
Chief of Bureau.

Hon. D. F. HOUSTON,
Secretary of Agriculture.

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MAP.

Soil map, Davidson County sheet, North Carolina.

SOIL SURVEY OF DAVIDSON COUNTY, NORTH CAROLINA.

By R. B. HARDISON, of the U. S. Department of Agriculture, In Charge, and
L. L. BRINKLEY, of the North Carolina Department of Agriculture.—Area
Inspected by W. EDWARD HEARN.

DESCRIPTION OF THE AREA.

Davidson County is situated in the west-central part of North Carolina. Lexington, the county seat, is 114 miles west of Raleigh, 33 miles southwest of Greensboro, and 60 miles northeast of Charlotte. The county is bounded on the north by Forsyth County, on the east by Guilford and Randolph Counties, on the south by Montgomery County, and on the west by Rowan and Davie Counties, being separated from the last-named two counties by the Yadkin River. The county embraces an area of 579 square miles, or 370,560 acres.

Physiographically, Davidson County is a plateau, dissected by numerous streams which have cut deep, narrow valleys. The surface of the greater part of the county is rolling to steeply rolling, and the lowlands along the streams constitute the only level areas. Some of the interstream areas are gently rolling or undulating. In the southern half of the county the topography becomes semimountainous in the vicinity of Cid, Denton, Jackson Hill, Bain, Newsom, Poplar Springs Church, Lick Creek Church, and High Rock. Among the more prominent of the semimountainous areas are Flat Swamp, Three Hat, Rich, Wild Cat, Grist, and Bald Mountains. In most places the slopes overlooking the larger streams are smooth and gentle, but in a few instances they are decidedly gullied and precipitous and are subject to erosion unless terraced or kept in grasses or other cover crops. The smoothest upland areas occur around Thomasville, Wallburg, Arcadia, Arnold, Jubilee, and Southmont. With the exception of the semimountainous areas, the topography of the greater part of the county is favorable for agriculture.

The highest elevations occur in the northern end of the county and the lowest in the southwestern part, along the Yadkin River. The elevation above sea level at Thomasville is 851 feet, at Lexington 758 feet, and at Linwood 657 feet.

Davidson County is drained by the Yadkin River, which forms the entire western boundary. With the exception of a stretch be-

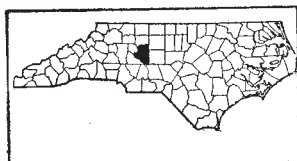


FIG. 1.—Sketch map showing location of the Davidson County area, North Carolina.

tween the Toll Bridge and Longs Ferry, the Yadkin is a swiftly flowing stream, capable of supplying much power. The tributaries of the Yadkin River flow in a general southwesterly direction. The largest have swift currents, and are flanked in many places by high hills. There are excellent water-power sites also along these streams and in a few places power has been developed and is used for operating gristmills and small sawmills. Plummers Creek, with a few branches, drains a small area along the eastern boundary of the county and forms the headwaters of Uharie River, which joins the Yadkin in Montgomery County. Many small perennial streams, spring branches, and intermittent streams make up a well-developed drainage system, which reaches all parts of the county. All the first-bottom land along the streams is subject to overflows of short duration.

Davidson County was formed from Rowan County in 1822, although the first settlements in this region were made about 1750. The early settlers came mainly from the British Isles. A small percentage of the present population of the county is of German parentage. The territory around Linwood and the Jersey section was settled by immigrants from New Jersey and Pennsylvania.

The population of the county is given in the 1910 census as 29,404, of which 72.6 per cent is rural. The rural population is fairly well distributed over the county, except in the semimountainous sections of the southern end. A small percentage of the population is colored.

Lexington, the county seat and largest town, with a population in 1910 of 4,163, is situated near the center of the county. A number of flour mills and furniture factories are located here. Thomasville, with a population of 3,877, is an important furniture manufacturing town. Denton, Southmont, Linwood, and Welcome are smaller towns and trading centers of prosperous agricultural sections.

The railroad transportation facilities of Davidson County are good. The main line of the Southern Railway crosses the county near the center in a northeast-southwest direction and the Winston-Salem Southbound Railway crosses in a north and south direction, intersecting the Southern at Lexington. The Carolina & Yadkin River Railway, which connects with the Southern at Thomasville and with the Winston-Salem Southbound at High Rock, serves a large territory in the eastern and southern parts of the county.

The public roads of Davidson County in general are only fair. In 1915 the county made a \$300,000 bond issue for road building and at present a number of good highways are under construction. The most important of these extend from High Point, in Guilford County, through Thomasville and Lexington to Salisbury; from Lexington to Winston-Salem; from Lexington to Cid; from Thomas-

ville to Winston-Salem; from Thomasville to Denton; and from Lexington to Southmont. All sections of the county are reached by rural mail delivery service. The greater part of the county is served by telephone lines, and there are many good schools and churches.

Lexington, Salisbury, and Winston-Salem are the principal markets for wheat, corn, and cotton. Tobacco is marketed in Winston-Salem. Garden vegetables, fruits, poultry, and eggs find a ready market in High Point, Thomasville, Lexington, and Winston-Salem.

CLIMATE.

There is no Weather Bureau station in Davidson County, but the following table, compiled from the records of the station at Salisbury, Rowan County, may be considered as showing the general climatic conditions.

Normal monthly, seasonal, and annual temperature and precipitation at Salisbury, Rowan County.

Month.	Temperature.			Precipitation.		
	Mean.	Absolute maximum.	Absolute minimum.	Mean.	Total amount for the driest year (1898).	Total amount for the wettest year (1908).
	°F.	°F.	°F.	Inches.	Inches.	Inches.
December.....	42.4	75	6	3.75	1.92	4.53
January.....	41.0	79	6	3.46	1.86	5.09
February.....	41.8	75	-1	4.25	0.93	6.02
Winter.....	41.7	79	-1	11.46	4.71	15.64
March.....	51.1	92	16	4.56	5.57	3.93
April.....	59.7	94	20	3.29	2.82	3.20
May.....	69.1	100	30	4.28	2.46	3.20
Spring.....	60.0	100	16	12.13	10.85	10.33
June.....	75.7	101	41	4.57	2.08	2.25
July.....	79.0	102	54	5.04	3.96	7.63
August.....	77.5	102	45	5.33	7.07	9.65
Summer.....	77.4	102	41	14.94	13.11	19.53
September.....	71.7	100	41	3.20	0.94	5.13
October.....	59.3	94	23	3.25	2.60	6.83
November.....	50.5	85	12	2.63	3.36	1.97
Fall.....	60.5	100	12	9.08	6.90	13.93
Year.....	59.9	102	-1	47.61	35.57	59.43

Owing to its relatively high elevation and its rolling surface, with the consequent good natural drainage, Davidson County has a remarkably healthful climate. The mean annual temperature as re-

corded at Salisbury is 59.9° F. The highest temperature on record is 102° and the lowest -1° F.

The average annual rainfall amounts to 47.61 inches. The precipitation is well distributed throughout the year, somewhat heavier in the spring and summer and lighter in the fall. Considerable snow falls nearly every winter, but it seldom remains on the ground more than three or four days.

The average date of the last killing frost in the spring is April 9, and that of the first in the fall October 21. This gives an average growing season of 195 days, which is sufficient for the most tender long-season crops. The date of the latest recorded killing frost in the spring is May 15, and that of the earliest in the fall October 3.

AGRICULTURE.

The settlers in the territory now comprising Davidson County early began growing wheat, corn, oats, flax, potatoes, and garden vegetables. Tobacco was grown for home use. Later some cotton was grown. The seeds were separated from the lint by hand and the fiber was spun and woven at home. In 1837 a cotton gin was built at Salem (now Winston-Salem) and from this time until the Civil War cotton was an important money crop in the northern part of the county. Work stock, cattle, hogs, sheep, and goats were brought in by the pioneers and were raised in greater numbers each succeeding year until the outbreak of the Civil War.

In the early days cultural methods were poor. Wheat and oats were sown on unbroken ground and plowed in with a shovel or bull-tongue plow. A yield of 7 or 8 bushels of wheat per acre on fresh land was considered excellent. About 1850 Peruvian guano was introduced as a fertilizer. This was used for the most part on wheat land, the usual application being about 100 pounds per acre. About 1875 larger plows and harrows were brought into use, and since that time farming methods have undergone a continued improvement.

Fayetteville was the first market for the products of Davidson County. Bacon, lard, flour, flaxseed, and leather were exchanged there for sugar, coffee, molasses, dry goods, and other necessities.

In the census year of 1850 the county produced 1,368,100 pounds of cotton, 465,828 bushels of corn, 114,359 bushels of wheat, 102,703 bushels of oats, 80,502 pounds of tobacco, and 17,305 pounds of wool. The growing of tobacco as an important money crop began near Wallburg in 1857. About 1860 a tobacco factory was built at Wallburg and in 1872 a warehouse was opened in Winston.

In 1879, according to the census, there were 36,983 acres in corn, producing 549,906 bushels; 32,195 acres in wheat, producing 174,671 bushels; 16,924 acres in oats, producing 122,063 bushels; and 277 acres in rye, producing 1,414 bushels. In the same year 8,667 tons

of hay were obtained from 8,058 acres, 1,553 bales of cotton from 3,779 acres, and 260,538 pounds of tobacco from 484 acres. Sweet potatoes were grown for home use on 390 acres, producing 30,665 bushels.

By 1889 the acreage in corn had been reduced to 31,848 acres and that in oats to 13,023 acres. The tobacco acreage had increased to 1,703 acres and the production to 694,480 pounds. About 1,000 acres less than in 1879 were planted to cotton. The acreage of all other crops remained about the same.

At present the main income crops of the county are cotton, tobacco, and wheat, while the main subsistence crops are corn, wheat, oats, and hay. Practically every farm produces Irish potatoes, sorghum for sirup, garden vegetables, and a small quantity of apples, peaches, cherries, and plums. These are grown chiefly for home use, the surplus being sold at the local markets. In the northern and western parts of the county, near Winston-Salem and Salisbury, a few acres are devoted to the production of watermelons, cantaloupes, strawberries, and peanuts.

In point of acreage corn is the most important crop grown. According to the census, 32,507 acres were planted to this crop in 1909, with a production of 507,377 bushels. Most of the corn is consumed on the farms, the surplus being sold at the local markets.

Wheat is grown on nearly every farm in the county and is the second crop in point of acreage. The census of 1910 reports 30,874 acres in wheat, with a production of 278,515 bushels. This crop is grown primarily for home use over the greater part of the county, but in the southern part it serves as the principal income crop. The county's production of this cereal is greater than its consumption and large quantities of both wheat and flour are shipped to outside markets. Some wheat is shipped into the county and ground at the local mills.

Hay is the third crop from the standpoint of acreage. The census of 1910 reports 7,306 acres in cultivated grasses, with a production of 8,725 tons of hay. In addition to this, 6,336 tons of wild grasses were mowed from 4,249 acres. In some sections of the county considerable grain is cut green for hay. The greater part of the hay from cultivated grasses consists of clovers. The county's production of hay is apparently sufficient to meet the local demands.

Of the strictly cash crops, cotton is the most important. In 1909 there were 5,833 acres devoted to cotton, from which 2,384 bales were obtained. The greater part of the crop is marketed at Lexington, Salisbury, and Winston-Salem.

Tobacco is the cash crop of second importance. It is grown only in the northern half of the county. The 1910 census reports 2,019

acres planted to tobacco in 1909, with a production of 1,066,331 pounds. There are no warehouses in the county and the entire tobacco crop is sold in Winston-Salem.

On farms reporting dairy products in 1909 there were 5,099 dairy cows. The value of the dairy products, excluding those consumed at home, is reported as \$119,212, a large part of the production being sold at Winston-Salem, High Point, and Salisbury. The only large herds of dairy cows kept in the county are at Lexington and Thomasville. Nearly every farmer has from 2 to 5 cows, which supply milk and butter for home use and for sale at the local markets. In recent years considerable cream has been sold at a creamery in Greensboro. In 1915 a creamery was established at Lexington and at present the surplus cream of the county is converted into butter here. Eight cream routes have been established and about a dozen more are contemplated.

The feeding of cattle is carried on only to a small extent. There are a few small herds of purebred cattle in the county. On some of the farms one or two colts are raised each year. Enough hogs are raised on nearly every farm to supply pork, bacon, and lard for home use, but there is not enough surplus to meet the demand of the local markets. In 1909 there were 2,383 calves, 2,352 other cattle, 16,616 hogs, and 391 sheep and goats sold or slaughtered in the county, their total value being \$330,573. Poultry and eggs were produced to the value of \$169,789.

The farmers of Davidson County recognize the fact that the heavy soils, including the Davidson clay, Mecklenburg clay loam, Cecil clay, Cecil clay loam, Georgeville silty clay loam, and Georgeville silt loam, are best suited to the production of wheat, corn, oats, and clover, and that the sandy soils of the Durham, Appling, and Cecil series are better adapted to the production of tobacco and cotton. The Congaree fine sandy loam and silt loam are considered especially good soils for corn, and the sandy loams and fine sandy loams of the Cecil, Appling, and Durham series as the best soils of the county for vegetables, strawberries, sweet potatoes, Irish potatoes, and small fruits.

The farm dwellings are generally large and substantial. Small tenant houses containing 2 to 5 rooms are conveniently arranged on the larger plantations. The barns usually are large, but many of them are of the old hewed-log type. In the northern part of the county, near Wallburg, there are several "bank barns" with storage room for considerable grain and hay and space for the work animals, other live stock, and farming implements. On farms having the old-style barns separate granaries and cornercribs are built. Only a small percentage of the cultivated land is fenced. Pastures

are usually fenced with barbed wire. Small fields used for hogs are fenced with woven wire. The work stock consists of horses and mules in about equal proportion. The common farm machinery includes 2, 3, and 4 horse turning and disk plows, disk and straight-toothed harrows, rollers, and 2-horse cultivators, mowing machines, rakes, reapers, binders, and stalk cutters. Some of the heavier farm machinery is owned jointly by two or more farmers. Thrashing machines operated by traction engines travel from farm to farm as soon as the harvest season opens.

Systematic crop rotation is not generally followed. Diversification of crops is general over the county, but varies in character in different sections. In the northern half of the county, particularly around Thomasville, Wallburg, and Arcadia, clover usually is sown with wheat in the fall and cut for hay one year, a second crop being harvested for seed or turned under. The following year this land is planted to cotton or corn and these crops are followed by tobacco or wheat. Rye frequently is sown between cotton and tobacco rows. Around Linwood and Southmont some of the most successful farmers follow cotton with wheat and red clover, which is cut one year for hay, the second growth sometimes being turned under. The third year the land is planted to cotton, corn or wheat. In all sections of the county corn is preceded by clover when possible.

In 1909 the total expenditure for commercial fertilizer in Davidson County amounted to \$78,622, or \$26.53 for each of the 2,964 farms reporting outlay. The greater part of the fertilizer is used for wheat, cotton, and tobacco. Corn is not generally fertilized. Over the greater part of the county 16 per cent acid phosphate is used for wheat at the rate of 100 to 350 pounds per acre. Near Thomasville and Wallburg and in the Horse Shoe Neck section some farmers prefer an 8-2-2¹ mixture. For cotton acreage applications of about 200 to 400 pounds of an 8-4-4, 8-3-3 or 8-2-2 mixture, or of 16 per cent acid phosphate, are made. In the vicinity of Arcadia and Yadkin College tobacco land is given an acreage application of 500 to 600 pounds of an 8-3-4 or 8-3-5 preparation, and around Thomasville and Wallburg from 200 to 600 pounds per acre of an 8-2-2, 8-2½-3 or 10-4 mixture is used for this crop.

Farm laborers are scarce in Davidson County. The negro population is confined mostly to Lexington and Thomasville and the majority of the farm laborers are white. The average price paid for labor is about \$20 per month, with the use of a dwelling house, or \$13 to \$15 per month with board and lodging. Day laborers receive about \$1 to \$1.50 a day. In 1909 the total expenditure for

¹ Fertilizer formulas in this report are stated in the order, phosphoric acid, nitrogen, potash.

labor was \$61,762, or \$63.28 for each of the 976 farms reporting outlay for this purpose.

The farms vary greatly in size, ranging from about 25 acres to 3,000 acres or more. The larger holdings, however, are mostly unimproved. The average size of the farms, as reported in the 1910 census, is 94.5 acres. In 1909 there were 3,505 farms in the county, 77.8 per cent of which were operated by the owners, 22 per cent by tenants, and 0.2 per cent by managers. Tenant farming is conducted almost entirely on a share basis, and this varies considerably in different localities. In the southern end of the county the landowner usually furnishes the work stock and two-thirds of the fertilizer and seed, and receives two-thirds of all crops grown. In some instances the tenant furnishes the work stock and two-thirds of the fertilizer and seed and retains two-thirds of all crops produced. In other places the landowner furnishes work stock, tools, seed, and one-half the fertilizer and receives one-half of all crops produced. Around Lexington and Linwood and in a few other places 1,000 pounds of lint cotton is given for the use of a 1-horse farm (20 to 30 acres).

In 1910, according to the census, 91 per cent of the area of Davidson County was in farms and 44.4 per cent of the farm land was improved. The largest unimproved areas are in the semimountainous sections in the southern part of the county. Land values vary according to the soil types, improvements, topography, and location with reference to markets and transportation facilities. Near Thomasville and Wallburg the price of farm land ranges from \$35 to \$60 an acre. Around Lexington it is held at \$50 to \$100 an acre. In remote localities uncleared land with no merchantable timber sells at about \$5 an acre.

SOILS.

Davidson County lies about midway between the eastern and western boundaries of the Piedmont Plateau, a physiographic province extending from the Hudson River to east-central Alabama. Taking as the basis of classification the geological process of accumulation, the soils of the county are included in two general groups: (1) Residual soils, or those derived in place from the underlying rocks, and (2) alluvial soils, or those laid down along stream courses by overflow waters. The total area of the latter is comparatively small.

The rocks from which the residual soils are derived vary materially in different localities and there is a corresponding difference in the resultant soils.

The southern part of the county as far north as a line drawn from Longs Ferry through Feezor, past Becks Church to Holly Grove

Church, and thence along the Raleigh Road into Randolph County, is made up of a rock belt known as the Carolina Slate Belt, or the Carolina Metamorphic Slate and Volcanic Belt. The rocks of this belt consist mainly of laminated slates and massive rocks having practically the same mineralogical composition but without slaty structure. The more massive rocks are hard and brittle and very resistant to the agencies of weathering. Both the laminated slates and the massive rocks are interbedded with and cut by dikes of a greenish diorite rock. Some of the minerals more or less common to the rocks of the slate belt are hornblende, feldspar, epidote, chlorite, apatite, magnetite, ilmenite, pyroxene, and quartz. These minerals, together with others, have combined to form chloritic schists, diabase rhyolite, andesite, diorite, and many others. These rocks are uniformly fine grained.

A line beginning at the toll bridge on Yadkin River and continuing along the public highway through Lexington to Abbotts Creek and thence up Abbotts Creek to the extreme northeastern corner of the county marks roughly the eastern boundary of a region underlain mainly by porphyritic granite. In the northern part of this region, beginning at an east-and-west line drawn through Eller and continuing into Forsyth County, the porphyritic structure seems to disappear to some extent and the rocks are more uniformly medium textured. They are also more deeply weathered, outcrops being rare. In the remainder of this belt phenocrysts are numerous on the surface and in road cuts they may be seen deeply embedded in the fine-grained base.

That part of the county lying north of the Raleigh Road and on the east side of Abbotts Creek is underlain by a fine to medium textured binary granite. In places this granite is cut at frequent intervals by dikes of diorite. The binary granites are deeply weathered and streams in this part of the county have cut their channels deeper than in any other locality.

An area averaging about 6 miles in length and $4\frac{1}{2}$ miles in width, situated in the southwestern part of the county, is made up exclusively of a deeply weathered diorite. The Southern Railway track from the Yadkin River to Beaverdam Creek passes through this area and Linwood is located practically in the center of it.

The alluvial soils developed on the terraces of the Yadkin River represent materials washed from the Appalachian Mountains and the Piedmont Plateau and deposited in their present position by overflow waters. The soils along the other streams consist of reworked Piedmont materials.

Twenty-two distinct soil types are mapped in Davidson County, and these are grouped in ten series. The soils derived from the Carolina slates are included in the Georgeville and Alamance series;

those derived from the porphyritic granites in the Cecil and Appling series; those derived from the binary granites in the Durham series; and those derived from the diorites in the Iredell, Mecklenburg, and Davidson series. The alluvial soils along the streams are classed with the Wickham and Congaree series.

The Cecil series is characterized by gray to red surface soils and friable, red clay subsoils. The soils range in texture from very coarse sandy loam to clay, the lighter colors prevailing in the sandy members. A characteristic of the subsoil is the content of sharp quartz sand and the frequent occurrence of veins of quartz. Mica flakes also are usually present. This series includes the most important and most widely distributed soil types of the Piedmont Plateau. The heavier members are known as "red clay lands." The soils are derived from granites and gneiss. The Cecil series is represented in Davidson County by five types—the very coarse sandy loam, sandy loam, fine sandy loam, clay loam, and clay.

The Durham series is characterized by the grayish or whitish color of the surface soils and the yellow color and generally friable structure of the subsoils. These soils are derived from the light-colored, rather coarse grained granite and gneiss, consisting principally of quartz and feldspar, with some mica. In this county they are influenced locally by numerous intrusions of diorite. The topography is gently rolling to strongly rolling and the drainage is prevailingly good. Two types of this series are mapped—the Durham sandy loam and fine sandy loam.

The surface soils of the Appling series are prevailingly grayish or yellowish gray. The subsoils are mottled or streaked red and yellow. The color frequently begins as a yellow or reddish yellow and finally passes, within the 3-foot section, into a light red. The subsoils represent an intermediate grade, possibly due to a mingling of materials, between the yellow of the Durham series and the red of the Cecil series, with which the Appling series is closely associated. The soils are derived from gneiss and granite. They occupy gently rolling to steeply rolling positions. Two types, the Appling sandy loam and fine sandy loam, are mapped in this county.

The surface soils of the Georgeville series are gray to red, and the subsoils are red. The Alamance surface soils are gray or yellowish gray to almost white, and the subsoils are prevailingly yellow. The slates from which the soils of these series are derived are usually fine grained and give rise to soils of a decidedly silty texture. Thin slate fragments and small, rounded, slaty gravel are in many places present on the surface. The topography varies from flat and almost level to rolling and in some places steeply rolling. In Davidson County the Georgeville series is represented by four types—the stony

silt loam, gravelly silt loam, silt loam, and silty clay loam, and the Alamance series by two types—the gravelly silt loam and silt loam.

The surface soils of the Iredell series are prevailingly grayish brown to brown. The subsoils consist of extremely plastic, sticky or waxy clay of a yellowish-brown or greenish-yellow color. Disintegrated diorite rock is commonly encountered within the 3-foot section, and in many places the soil contains small iron concretions. The topography varies from nearly flat to gently rolling. The surface drainage is fair, but, owing to the impervious character of the subsoil, underdrainage is poor. The Iredell fine sandy loam and loam are the only members of this series mapped in the county.

The surface soils of the Mecklenburg series are predominantly brown to reddish brown. The subsoils consist of yellowish brown to reddish yellow, stiff, waxy clay and usually grade into disintegrated rock within the 3-foot section. The Mecklenburg soils differ from those of the Iredell series mainly in the more advanced stage of weathering and oxidation of the material. The topography is gently rolling to rolling, and the surface drainage is fair. One type, the Mecklenburg clay loam, is mapped in Davidson County.

The Davidson series is characterized by the reddish-brown to dark-red color of the surface soils and by dark-red, heavy clay subsoils. These soils are composed of material which has reached a much more advanced stage of weathering than that forming the Mecklenburg soils. They are derived from diorite and diabase. The topography is gently rolling and the surface drainage is good. The Davidson clay is the only member of the series mapped in this county.

The Wickham series includes yellowish-brown or reddish-brown to brown surface soils and yellowish-brown to red subsoils, usually friable in structure. The soils of this series occur on the terraces above normal overflow along the streams within the crystalline-rock belt of the Appalachian Mountain and Piedmont Plateau regions and in the adjacent parts of the Coastal Plain, where the material has been derived principally from the crystalline rocks. The topography is level to undulating, and the natural drainage is fair. One type, the Wickham loam, is mapped in Davidson County.

The surface soils and subsoils of the Congaree series are prevailingly reddish brown or brown, there being but little change in texture, structure, and color throughout the 3-foot section. Occasionally grayish and yellowish mottling is encountered in the subsoil. Finely divided particles of mica usually are present. These soils are developed in the overflowed first bottoms of the streams of the Piedmont Plateau and in similar positions in the Coastal Plain along streams issuing from the Piedmont. They represent materials washed from

the soils of the Piedmont Plateau and Appalachian Mountain regions. The Congaree fine sandy loam and silt loam are mapped in this county.

The following table gives the name and the actual and relative extent of each soil type mapped in Davidson County:

Areas of different soils.

Soil.	Acres.	Per cent.	Soil.	Acres.	Per cent.
Cecil sandy loam.....	62,336	16.8	Iredell fine sandy loam.....	8,832	2.4
Georgeville silt loam.....	53,376	14.4	Davidson clay.....	8,768	2.4
Alamance silt loam.....	35,264	9.5	Georgeville stony silt loam...	7,936	2.2
Durham sandy loam.....	30,144	8.1	Cecil clay.....	7,424	2.0
Congaree silt loam.....	26,816	7.3	Durham fine sandy loam.....	6,400	1.7
Cecil clay loam.....	22,080	6.0	Mecklenburg clay loam.....	6,080	1.6
Appling sandy loam.....	18,560	5.0	Alamance gravelly silt loam...	5,056	1.4
Congaree fine sandy loam.....	15,552	4.2	Cecil fine sandy loam.....	4,160	1.1
Iredell loam.....	13,376	3.6	Wickham loam.....	2,368	.6
Georgeville silty clay loam....	12,352	3.3	Appling fine sandy loam.....	1,856	.5
Cecil very coarse sandy loam...	11,200	3.0			
Georgeville gravelly silt loam...	10,624	2.9	Total.....	370,560

CECIL VERY COARSE SANDY LOAM.

The surface soil of the Cecil very coarse sandy loam, where typically developed, consists of a gray very coarse sandy loam having a depth of 6 to 10 inches. The subsoil is a red, friable clay, generally extending to a depth of 3 feet or more. Angular quartz gravel particles, ranging up to one-fourth inch in diameter, are distributed over the surface and intermixed with the surface soil and to a less extent with the subsoil, constituting from 10 to 25 per cent of the soil mass. In places the type consists of a sandy loam or fine sandy loam carrying some very coarse sand and much fine gravel. In the area about 5 miles northeast of Lexington the surface soil to a depth of 1 to 3 inches is a sandy loam containing some fine gravel. This material grades into a loam or clay loam, which is underlain at a depth of about 6 inches by a stiff red clay.

This type has its most extensive development in the western part of the county. Three of the largest areas are mapped southwest of Linwood, north of Smith Grove Church, and north of Churchland.

The topography ranges from rolling to steeply rolling and rough. The natural surface drainage is excellent, and even excessive on the steeper slopes. In the vicinity of Yadkin College and along the Yadkin River erosion has been severe, resulting in the formation of numerous gullies or ravines traversed by wet-weather streams and in the exposure of the clay subsoil in places.

Probably not over 35 per cent of this type is under cultivation. A part of it has been cleared and is now lying idle, while the remainder is forested with hardwoods and old-field pine. Corn, cotton, wheat, and oats are the principal crops grown. A small acreage is devoted to tobacco.

The Cecil very coarse sandy loam is easily handled. The same methods of cultivation and fertilization are followed upon it as upon the Cecil sandy loam, and similar yields are obtained. It also responds to the same methods of improvement as the latter type.

Land of this type sells for \$15 to \$40 an acre.

In the following table the results of mechanical analyses of samples of the soil and subsoil of the Cecil very coarse sandy loam are given:

Mechanical analyses of Cecil very coarse sandy loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>
234023.....	Soil.....	16.4	16.1	5.3	17.7	16.0	21.5	6.8
234024.....	Subsoil.....	7.1	5.0	1.6	6.7	7.2	12.7	59.7

CECIL SANDY LOAM.

The Cecil sandy loam consists of a gray to grayish-brown, medium sandy loam, underlain at a depth of 8 to 10 inches by a red, friable to stiff clay. In places there is present on the surface a considerable quantity of granite and quartz fragments ranging in size from small pebbles to large stones. In the vicinity of Haristons Ferry water-rounded quartz gravel and pebbles are scattered over the surface of small areas. Along the Yadkin River near Oaks Ferry, Haristons Ferry, and in the Horse Shoe Neck section the subsoil of this type is decidedly brittle and crumbly, owing to the presence of coarse quartz sand. In a few places, particularly to the north of Wallburg and northeast of Teaguetown, the subsoil carries a high percentage of mica, which imparts a slick, greasy feel. Some areas of Cecil clay, Cecil clay loam, Appling sandy loam, Cecil coarse sandy loam, and Cecil fine sandy loam that were too small to separate on the map are included with this type.

The Cecil sandy loam is the predominating soil in the western and northwestern parts of the county. Its continuity here is broken only by small areas of Appling sandy loam, Cecil clay loam, Durham sandy loam, and narrow strips of Congaree fine sandy loam and silt loam.

The surface features of the Cecil sandy loam are varied. In general the type is rolling to strongly rolling, becoming decidedly broken

and hilly along the larger streams. The smoothest areas occur along interstream divides, while the roughest areas occupy the slopes overlooking the Yadkin River in the vicinity of Boones Cabin, Yadkin College, and Hartleys Ferry. As a result of its topography and its porous surface soil, this type is well drained. On some of the steeper slopes drainage is excessive.

The Cecil sandy loam is one of the more important agricultural soils of the county. Probably 40 per cent of it is cleared and used for the production of crops. The remainder supports a forest growth consisting mainly of hickory, shortleaf pine, and white, red, and post oak, with some locust, persimmon, cedar, and dogwood. The most important crops grown are corn, wheat, oats, cotton, clover, and tobacco. A small acreage is planted to sweet potatoes, Irish potatoes, and sorghum cane. In the northern and western parts of the county, near Lembeth, Wallburg, Teaguetown, Tyro, and Jubilee watermelons, strawberries, and peanuts are grown to a small extent. Garden vegetables and fruits are grown throughout the type for home use and for sale at the local markets.

Corn yields from 15 to 50 bushels per acre, averaging about 25 bushels; wheat 12 to 20 bushels, oats 20 to 40 bushels, cotton one-half to 1 bale, and tobacco 600 to 1,000 pounds. A large percentage of the clover grown is turned under as a green manure. In many instances, however, one-half to 1 ton per acre of clover hay is cut. The yields of tobacco are good, being slightly less than upon the Durham sandy loam.

The Cecil sandy loam is easily tilled and does not clod or bake badly on drying. It responds readily to methods of improvement and can be easily maintained in a good productive condition. As a general rule, the most successful farmers sow wheat and clover together, leave the land in clover for two years, and then plant cotton or corn, following these crops with tobacco or wheat. Corn usually is not fertilized when it follows clover, but otherwise an acreage application of 100 to 300 pounds of acid phosphate, or of some other low-grade fertilizer, generally is given. Wheat land usually receives an acreage application of 100 to 300 pounds of acid phosphate and cotton land about 400 pounds of an 8-4-4 preparation. When cotton follows wheat 100 to 300 pounds per acre of acid phosphate is applied. On some parts of the Cecil sandy loam 500 pounds per acre of an 8-3-5 or 8-3-4 mixture is used for tobacco, but in most instances this crop receives an acreage application of 200 to 400 pounds of an 8-2-2 fertilizer.

The price of land of this type ranges generally from \$15 to \$50 an acre. Near the larger towns small areas sell at higher prices.

In many places the Cecil sandy loam is low in organic matter, which can be largely supplied by turning under green manuring

crops, particularly the clovers. Some farmers on this soil have found that liming is especially beneficial in obtaining stands of clover. Thorough preparation of the seed bed is essential for maximum yields of all crops. The Cecil sandy loam is the most important trucking soil developed in Mecklenburg County, 30 miles southwest of Davidson.

CECIL FINE SANDY LOAM.

The surface soil of the Cecil fine sandy loam consists of a gray to brownish-gray fine sandy loam or heavy fine sandy loam having a depth of 8 to 12 inches. The subsoil is a red, friable clay, usually carrying a noticeable quantity of fine quartz sand. In places there is considerable finely divided mica in the subsoil. Throughout this type there are spots from which the surface mantle has been removed, leaving the red clay subsoil exposed. The outcrop of quartz veins has given rise to small areas on which there is quartz gravel and stone. Where this type adjoins the Georgeville and Alamance soils it carries a considerable percentage of silt, owing to the influence of the underlying slate rocks.

The Cecil fine sandy loam is one of the inextensive soil types in the county. It occurs mostly along the borders between the slate soils and the soils derived from granite. The largest areas are encountered near Thomasville, Wards Mill, Lexington, and Feezor. The topography ranges from rolling to strongly rolling and hilly, and drainage is good.

Owing to its comparatively small extent, this type is not important agriculturally. About 35 per cent of it is under cultivation. The forest growth consists mainly of shortleaf pine, hickory, oak, and dogwood, with a scattering of cedar, persimmon, and locust. The chief crops grown are corn, wheat, cotton, oats, and clover. Corn yields ordinarily 20 to 30 bushels, wheat 12 to 20 bushels, oats 20 to 45 bushels, and cotton one-half to 1 bale per acre.

The value of land of this type depends mainly upon its location. In the section west of Southmont it can be bought for \$15 to \$25 an acre. Nearer Lexington and Thomasville and along the railroads it sells for \$25 to \$50 an acre.

This soil is suited to practically the same crops as the Cecil sandy loam and responds to the same treatment for improvement.

CECIL CLAY LOAM.

The Cecil clay loam consists of a red, reddish-brown or brown, heavy clay loam, 6 to 10 inches deep, underlain by a heavy, stiff, red clay, which extends to a depth of 36 inches or more. In places along the hills overlooking the Yadkin River there is present on the

surface an appreciable quantity of quartz fragments and granitic stones. The subsoil of such areas usually carries considerable sand and fine gravel. There are included in this type a few small areas of Cecil sandy loam, Cecil fine sandy loam, and Louisa clay loam, the latter being confined to the northern part of the county. The Louisa clay loam differs from the Cecil clay loam in having a high percentage of fine mica flakes, which impart to both surface soil and subsoil a glistening appearance and an unctuous feel. Along the margin between this type and the soils derived from diorite there are included spots of Mecklenburg clay loam and clay and also small areas of Davidson clay.

The largest and most important areas of the Cecil clay loam are encountered between Ebenezer Church and Lexington, between Cotton Grove and Lexington, around Bethesda Church, south of Penigers Mill, and northeast of Sowers Ferry. Many smaller areas are scattered over the western and northern parts of the county.

The topography ranges from gently rolling and rolling in inter-stream areas to steeply rolling and badly broken along the larger streams. The smoothest areas occur near Ebenezer Church, Sides Store, and Bethesda Church.

The surface drainage of this type is prevailingly good, but its heavy, stiff subsoil retards the downward percolation of water and underdrainage is not so well established as in the sandy members of the Cecil series.

The Cecil clay loam occupies a comparatively small part of the county. It is a strong soil, however, and about 60 per cent of its total area is under cultivation. Uncleared areas support a forest growth consisting mainly of pine, hickory, red oak, white oak, and post oak, with some dogwood, sassafras bushes, and cedar.

This soil is used mainly for the production of wheat, corn, cotton, oats, and clover. Sorghum cane, Irish potatoes, and garden vegetables are grown to a small extent. Wheat yields 15 to 30 bushels per acre, corn 20 to 30 bushels, cotton one-half to 1 bale, and oats 25 to 50 bushels, averaging about 30 bushels. In favorable seasons and with good methods of treatment from 1 to 2 tons per acre of clover hay is obtained.

All crops on the Cecil clay loam are fertilized to some extent. For wheat and oats, from 100 to 300 pounds per acre of 16 per cent acid phosphate is used. For cotton, an acreage application of 200 to 300 pounds of acid phosphate is used on new land and 200 to 300 pounds of an 8-3-3 fertilizer on old land. A few farmers apply 400 pounds per acre of an 8-4-4 mixture, while many farmers along the river use an 8-2-2 formula at the rate of 200 to 400 pounds per acre. As a rule, corn is planted after clover and no fertilizer is applied, but

where it is not preceded by clover about 200 pounds per acre of acid phosphate is used.

Farm land of the Cecil clay loam is held at about \$20 to \$100 an acre, the higher prices prevailing near Lexington and Ebenezer Church.

This soil is capable of being built up to a high state of productivity. Its physical condition generally can be greatly improved by the incorporation of barnyard and green manures. Liming is especially beneficial in obtaining good stands of clover as well as in improving the structure of the soil. Deeper breaking and more thorough pulverization of the seed bed would have a tendency to check erosion on the slopes as well as materially to increase crop yields, as more of the rain water would be absorbed by the soil and conserved for crop use.

CECIL CLAY.

The Cecil clay, locally referred to as "red, heavy clay land," consists of a red, heavy clay loam or clay, underlain at a depth of about 5 to 8 inches by a red, stiff clay which extends to a depth of 36 inches or more. In places the surface soil is reddish brown in color and deeper than typical. There are included with this type a few small areas of Davidson clay and Mecklenburg clay loam.

The Cecil clay occupies a small percentage of the area of the county. It is typically developed around Lexington and along the Lexington-Salisbury Highway as far west as Second Potts Creek. Another important area occurs in the southwestern part of the county, between Cotton Grove and Longs Ferry. The topography is rolling to strongly rolling and the surface drainage is good, but on account of the heavy texture of the surface soil and subsoil the downward percolation of rain water is slow and the type can not be cultivated as soon after rains as the sandy soils.

Owing to its small extent the Cecil clay is not an important agricultural type. It is a strong soil, however, and probably about 60 per cent of it is cleared and farmed. The chief crops are wheat, corn, cotton, oats, and clover. The soil is fertilized and handled in practically the same way as the Cecil clay loam and yields are similar. The value of land of this type ranges from \$20 to \$90 an acre.

The Cecil clay responds to the same methods of improvement as the Cecil clay loam.

APPLING SANDY LOAM.

The surface soil of the Appling sandy loam, where typically developed, consists of a gray or brownish-gray, medium sandy loam having a depth of about 8 to 12 inches. The subsoil is a pale-red,

friable, sandy clay, with yellow and gray mottlings in the lower part of the 3-foot section. In places the subsoil consists of a yellow sandy clay, passing into a yellow and red mottled sandy clay at a depth of about 20 inches. In the northeastern part of the county the rocks giving rise to this soil are interbedded locally with mica schists, and in such localities the subsoil carries a high content of mica. Included with this type are small areas of Appling gravelly loam and coarse sandy loam, Cecil coarse sandy loam, Durham coarse sandy loam, and Durham sandy loam. Near Arcadia and to the northwest thereof outcrops of coarse-grained and porphyritic granites occur.

The Appling sandy loam occurs throughout the western and northern parts of the county in close association with the Cecil sandy loam. The most important areas are situated in the extreme northwestern corner of the county, near Wallburg, southwest of Welcome, and near the headwaters of First Potts Creek. The topography is gently rolling to steeply rolling, becoming broken and hilly along the streams. The smoothest areas occur around Wallburg and a short distance east of Arnold. Owing to its prevailingly rolling topography and its porous surface soil and friable subsoil, the surface drainage and underdrainage of this type are well established. In places, particularly on some of the slopes overlooking the streams, the surface drainage is excessive.

Probably about 50 per cent of this type is under cultivation. The forest growth on the remainder consists of shortleaf pine, red, white, and post oak, hickory, and dogwood. The principal crops are corn, wheat, tobacco, cotton, oats, and clover. Sweet potatoes, Irish potatoes, and sorghum are produced for home consumption and to some extent for neighboring markets. All garden vegetables common to this section of North Carolina are grown to meet the home demands, and the surplus finds a ready market in Lexington, Winston-Salem, and High Point. Peaches, pears, plums, cherries, and Concord grapes are grown on practically every farm for home use, and some are sold at the local markets. A creamery at Lexington is supplied with cream from cows kept on this type.

Corn yields 20 to 40 bushels; wheat, 10 to 17½ bushels; tobacco, 700 to 1,000 pounds; and cotton, one-third to two-thirds bale per acre.

As a result of its good drainage, the Appling sandy loam dries out early in the spring and tillage operations are not delayed. It is an easily tilled soil and draft stock of medium weight is usually employed in handling it. Land intended for wheat is broken as soon as possible after the removal of crops and harrowed down smooth. In some instances it is rebroken and harrowed again just before seeding time. The seed and fertilizer are put in with a drill and where clover is sown a clover seeder follows behind the wheat drill. Corn, tobacco, and cotton land is broken at any time between the removal of the pre-

ceding crop and the following spring. If broken in the early fall it is sometimes rebroken in the spring. In the cultivation of these crops one-horse walking cultivators generally are used. The fertilizers used on this soil are similar to those applied to similar crops on the Cecil sandy loam.

Land of this type does not often change hands. A few areas were sold a short time before the survey at \$20 to \$40 an acre. In general the price ranges from \$20 to \$50 an acre.

The Appling sandy loam is greatly benefited by deep breaking and liberal applications of barnyard manure. Various crops are grown on this soil and clover or cowpeas should be included in the rotation at least once in every three or four years.

APPLING FINE SANDY LOAM.

The Appling fine sandy loam consists of a gray, heavy fine sandy loam, underlain at a depth of 8 to 12 inches by a pale-red, friable fine sandy clay. In places the lower part of the 3-foot section is mottled with yellow and bright red.

This type is inextensively developed in Davidson County. The largest areas occur near Mount Tabor Church, north of Ebenezer School, and near Thomasville. The topography varies from gently rolling to rolling and the drainage is good.

The Appling fine sandy loam is considered a fair soil for all crops common to the county, and probably about 75 per cent of it is cleared and under cultivation. The remainder is forested with shortleaf pine, hickory, and oak. The principal crops grown are corn, cotton, tobacco, and wheat. Patches of sweet potatoes, Irish potatoes, and sorghum cane are grown for home use.

Crops on this soil are fertilized in practically the same way as similar crops on the adjoining soils, and the yields are about the same as on the Cecil fine sandy loam. The price of land of this type ranges from \$40 to \$75 an acre.

DURHAM SANDY LOAM.

The typical Durham sandy loam consists of a light-gray to gray sandy loam, passing at a depth of 4 to 6 inches into a pale-yellow sandy loam, which extends to a depth of 12 to 18 inches. The subsoil consists of a friable, yellow clay carrying a noticeable quantity of coarse quartz sand. In places there is present on the surface a small quantity of quartz fragments. In other places the granite which gives rise to the Durham sandy loam is cut by dikes of diorite, and in such localities the subsoil is mottled with gray, yellow, and brown and has a slick, greasy feel. In the northwestern part of the county, near Arcadia, outcrops of the parent rock occur. There are included

in this type small areas of Durham gravelly loam and coarse sandy loam, Cecil sandy loam, and Appling sandy loam. These spots would have been shown on the soil map had they been of sufficient size.

The Durham sandy loam is confined mainly to the northeastern part of the county. Nearly all the type lies east of Abbotts Creek and north of Hambys Creek. In this section of the county it occupies about 90 per cent of the total soil area. A few bodies of considerable size are scattered along Abbotts Creek on the west, and a number of small areas occur in other parts of the county.

The Durham sandy loam extends from the bottom land along the streams up to the crests of the drainage divides. The surface as a whole is rolling and hilly, and on the slopes overlooking the streams in some places it is badly gullied and broken. Inextensive areas occupying broad interstream positions are comparatively smooth. Probably the largest smooth area lies between Thomasville and Wards Mill. Owing to its surface configuration and its porous soil and subsoil, the Durham sandy loam has excellent natural drainage.

This is one of the most important agricultural soils of the county. It is conservatively estimated that 75 per cent of the type is cleared and used for the production of crops. The forested areas support a growth consisting mainly of white oak, red oak, post oak, hickory, and shortleaf pine, together with some dogwood, persimmon, and cedar.

The principal crops on this soil are corn, wheat, tobacco, and oats. Clover and rye are grown as winter cover crops and to some extent for feeding stock. A small acreage is devoted to cotton. Garden vegetables, including cabbage, beans, tomatoes, onions, beets, green peas, and turnips, are grown for home use and to some extent for the neighboring markets. Fruits, including peaches, pears, grapes, and plums, are grown on practically every farm for home consumption. A few herds of dairy cattle are maintained on farms on this soil.

Corn on the Durham sandy loam yields from 10 to 30 bushels per acre, averaging about 20 bushels. Wheat yields 8 to 20 bushels, tobacco 600 to 1,000 pounds, and cotton one-fourth to three-fourths bale per acre.

The Durham sandy loam is one of the most easily tilled soils in the county. In the preparation of this land for cotton, corn, and tobacco it usually is broken to a depth of 8 to 10 inches at any time between July and November, harrowed once or twice, and left until the following spring. It is then rebroken, harrowed again, and prepared for planting. A few farmers leave the land unbroken until

about March or April. One-horse walking cultivators are commonly used. In rotating crops, corn usually follows clover, after which the land is set in tobacco. Rotation is so arranged that tobacco does not follow clover.

Wheat generally is given an acreage application of about 200 pounds of an 8-2-2 or 10-4 fertilizer, or of 16 per cent phosphoric acid. In the vicinity of Thomasville some farmers use 400 to 600 pounds per acre of an 8-2½-3 mixture for tobacco. Another common fertilizer for tobacco has the formula 8-2-2 or 10-4 and is applied at the rate of about 200 pounds per acre. Corn generally is not fertilized, but in some instances an acreage application of 200 pounds of an 8-2-2 mixture is made.

Land of the Durham sandy loam sells for \$25 to \$50 an acre. This type varies widely in productiveness. It is very responsive to good farming practices and to fertilization, but if neglected it rapidly deteriorates. The greater part of it is low in organic matter, which can be supplied by growing and turning under green manuring crops. A few farmers have improved the soil by sowing rye in tobacco and cotton middles and by rotating crops, with clover included in the rotation once in every three to five years. In addition to supplying organic matter, the leguminous crops, such as clover, rye, and cowpeas, furnish nitrogen, so that this element may be largely eliminated in purchasing commercial fertilizers.

The Durham sandy loam is well suited to the production of peaches, pears, plums, and cherries, but the market demands do not seem to warrant the production of these fruits in greater quantities than at present. The thrifty condition of the small peach orchards on the type indicates that the production of this crop on a commercial scale would be profitable. It is a good trucking soil, as it is well drained and warms up quickly in the spring. It also is admirably suited to the production of bright tobacco and is used largely for this crop in the bright-tobacco belt of North Carolina and Virginia.

DURHAM FINE SANDY LOAM.

The surface soil of the Durham fine sandy loam where typically developed consists of 4 to 6 inches of a gray fine sandy loam, passing into a pale-yellow fine sandy loam which extends to a depth of 12 to 20 inches. The subsoil is a yellow, friable fine sandy clay. In a few localities, particularly near Light and south of Thomasville, the surface soil is a heavy fine sandy loam or loam carrying considerable iron concretions. In places quartz fragments and small granitic rocks occur on the surface. In places, where this type has been influenced by diorite, the subsoil is a dull-yellow or yellowish-brown.

plastic clay, and near the sources of small streams it consists of a gray and yellow mottled fine sandy clay. There are included in this type spots of Appling and Cecil fine sandy loam which were too small to show separately on the soil map.

The Durham fine sandy loam is not extensively developed in Davidson County. The largest areas lie immediately west and south of Thomasville, and a number of smaller areas are scattered over this section of the county. The topography is rolling to hilly and the surface drainage is good.

Owing to its relatively small extent, the Durham fine sandy loam is of minor agricultural importance. About 75 per cent of it is in cultivation, the remainder being forested with white oak, post oak, red oak, hickory, and shortleaf pine. The second growth is old-field pine, with a scattering of sweet gum, cedar, and dogwood.

This soil is utilized mainly for the production of wheat, corn, tobacco, and oats. All crops are fertilized in the same way as on the Durham sandy loam and the yields are about the same.

The greater part of the Durham fine sandy loam is situated near railroads and towns and is comparatively high priced, selling at \$40 to \$60 an acre.

This soil may be improved in the same way as the Durham sandy loam.

IREDELL FINE SANDY LOAM.

The surface soil of the Iredell fine sandy loam consists of a gray fine sandy loam to heavy fine sandy loam 8 to 10 inches deep. The subsoil is a yellowish-brown to dull-yellow, plastic, impervious clay, passing into the disintegrated parent rock at any depth between 22 and 36 inches. This type is locally referred to as "blackjack-oak land." As mapped it includes a few small areas of Iredell sandy loam and clay loam and Mecklenburg clay loam.

The Iredell fine sandy loam is not extensively developed in Davidson County. It occurs for the most part in the vicinity of Lexington and in the northeastern part of the county. Some of the most important areas are encountered near Lake, west of Mount Pleasant Church, and east of Abbotts Creek Church. The greater part of this type is gently rolling to steeply rolling and hilly. The surface drainage is good, but owing to the impervious character of the subsoil the underdrainage is poorly established.

The Iredell fine sandy loam is not an important agricultural soil. About 25 per cent of it is under cultivation, the remainder supporting a forest growth consisting mainly of blackjack oak, red oak, white oak, post oak, hickory, and shortleaf pine, with a scattering of locust, persimmon, cedar, and buckeye. The most important crops grown are corn, wheat, cotton, and oats. Clover is grown as a cover and

green manuring crop in a few places and to some extent for hay. Tobacco, sorghum, and sweet potatoes are grown to a small extent.

Corn yields from 15 to 40 bushels per acre, averaging about 20 bushels, wheat 10 to 17 bushels, oats 20 to 40 bushels, and cotton one-half to three-fourths bale. The fertilizers used on this soil are practically the same as those applied to similar crops on the Durham sandy loam. Cotton usually receives a slightly higher application of kainit to prevent rusting.

The value of land of this type ranges from about \$20 to \$50 an acre.

According to reliable farmers, this soil is greatly benefited by deep plowing and thorough pulverization. The growing and turning under of leguminous crops also has resulted in decidedly increased crop yields. The acreage yield of corn has in many instances been doubled by preceding this crop with clover.

IREDELL LOAM.

The surface soil of the Iredell loam to a depth of 10 inches consists of a brown or grayish-brown loam carrying a large quantity of small, rounded iron concretions. The subsoil consists of a yellowish-brown to greenish-yellow, heavy, sticky, plastic clay which grades into the decomposed parent rock at any depth between 18 and 36 inches. In places small, rounded iron concretions are present in the surface soil. A few areas of Iredell fine sandy loam and clay loam, as well as spots of Mecklenburg clay loam, too small to show separately on the soil map, are included in this type.

The Iredell loam is confined to no particular section of the county, although it is of only small extent in the northwestern part. It occurs mainly in the southeastern part of the county from Denton to the Montgomery County boundary. A few areas of considerable size are mapped about 2 miles east of Gordontown, near Cedar Grove School, and around Cherry Street School.

The topography ranges from nearly level to rolling and hilly. On the rolling and hilly areas surface drainage is good, but, on account of the impervious nature of the subsoil, underdrainage is poor. The heavier areas are in most instances nearly level and both surface drainage and underdrainage are poor.

Owing to its small extent and generally insufficient drainage, this type is not important agriculturally. Probably not over 10 per cent of it is under cultivation. The better drained areas are well suited to the production of wheat, corn, oats, and clover. Cotton is grown in small fields.

Wheat yields from 10 to 25 bushels per acre, averaging about 15 bushels, corn 15 to 40 bushels, oats 20 to 40 bushels, and clover 1,000

to 3,000 pounds. The usual cotton yield is one-half to 1 bale per acre.

There is a wide variation in the value of land of the Iredell loam. The better drained areas, situated near railroads, are worth \$30 to \$40 an acre, while uncleared areas in remote localities can be bought for \$5 an acre.

GEORGEVILLE STONY SILT LOAM.

The surface soil of the Georgeville stony silt loam consists of a gray to red silt loam from 4 to 8 inches deep. The subsoil is a red, brittle, silty clay, which passes gradually into the partially decomposed parent rock at a depth of about 24 to 30 inches. Large quantities of angular slate fragments ranging in size from fine particles to large stones are scattered over the surface and disseminated throughout the subsoil. In places considerable quartz is mixed with the slate fragments. In other places the rock formation giving rise to this soil is cut by dikes of diorite, and many diorite fragments are found on the surface. In some areas large boulders or rock ridges outcrop. These are indicated on the accompanying map by the rock outcrop symbol.

The Georgeville stony silt loam is developed in widely separated areas in the southern end of the county. Some of the larger areas occupy the crests and slopes of Flat Swamp, Wild Cat, Grist, Three Hat, Rich, and Bald Mountains. Another large area lies near the southern boundary of the county, at Poplar Springs Church.

The topography is prevailingly steeply rolling to precipitous. On the summits of some of the mountains upon which the type occurs there are small areas with a gently rolling to rolling surface. In places the slopes of these mountains are badly gullied by erosion.

None of the land of the Georgeville stony silt loam is cultivated. The original forest growth consisted of oak and pine, but most of the merchantable timber has been removed and the type now supports a second growth consisting mainly of hickory, white oak, post oak, red oak, maple, and shortleaf pine, with some poplar and chestnut oak.

Land of the Georgeville stony silt loam sells for about \$5 an acre. If cleared and seeded to grass the type could be used advantageously as pasture land. In areas where the bedrock does not come too near the surface, fruits, including apples, peaches, pears, and grapes, would do well.

GEORGEVILLE GRAVELLY SILT LOAM.

The surface soil of the Georgeville gravelly silt loam to a depth of 6 to 10 inches consists of a yellowish-gray to gray silt loam carrying about 40 to 50 per cent of smooth, flat or rounded, fine slate fragments. The subsoil is a pale-red to red silty clay, passing into the

decomposed parent rock at a depth of about 24 to 30 inches. In places it carries a high percentage of smooth and angular slaty gravel. Not infrequently the subsoil is lacking and the surface soil rests directly on the disintegrated bedrock.

The Georgeville gravelly silt loam is of comparatively small extent. The largest areas occur around Hannersville and between Cedar Grove School and Bakers Spring Church. Small areas are scattered throughout the southeastern section of the county.

The topography is rolling to strongly rolling and rough. Surface drainage and underdrainage are well established.

About 30 per cent of this type is in cultivation, the remainder supporting a forest growth consisting mainly of oak, shortleaf pine, hickory, maple, and dogwood, together with some locust, persimmon, and cedar. The principal crops grown are wheat, corn, oats, and clover. Fruits and vegetables are grown to about the same extent as on the Georgeville silt loam, and the yields on the two types are about the same.

As a result of the gravel content of this soil it is less likely to bake and harden than the other soils of the Georgeville series, and for this reason it works up into a mellower tilth. Fertilizer practice on this type is similar to that on the Georgeville silt loam.

Land of the Georgeville gravelly silt loam is held at about \$10 to \$50 an acre.

GEORGEVILLE SILT LOAM.

The Georgeville silt loam where typically developed consists of a yellowish to pale-red silt loam, 6 to 10 inches deep, underlain by a red or yellowish-red, crumbly silty clay, which extends to a depth of 36 inches. Over the surface of the greater part of the type there are some slate and quartz fragments and in a few places much slaty gravel. In places the subsoil is underlain at a depth of about 24 to 30 inches by the disintegrated parent rock, and outcrops of the solid bedrock occur on a number of the knolls and ridges. There are included in the type as mapped a few small areas of Alamance silt loam and Georgeville stony silt loam, gravelly silt loam, and silty clay loam.

The Georgeville silt loam is one of the most extensive soil types in Davidson County. It occurs in large areas throughout the southern end of the county. The topography ranges from gently rolling to rolling and hilly, being semimountainous in many places. The slopes along some of the stream courses are badly broken and precipitous, while the surface of some of the interstream areas compares favorably with that of the smoothest soils of the county. Some of the roughest areas are 3 miles northeast of Youngs Mill, $2\frac{1}{2}$ miles east of Light, around Taylors Grove Church, near Jackson Hill, and

1 mile west of Chapel Hill Church. The type has good natural surface drainage.

The Georgeville silt loam is one of the more important agricultural soils of the county. Probably 25 per cent of it is under cultivation, the remainder being forested with red oak, white oak, post oak, maple, poplar, hickory, dogwood, and shortleaf pine. The principal crops are wheat, corn, and oats. Cotton is grown to a small extent around Southmont and in the vicinity of Handy Crossroads, about 100 acres being devoted to it in the latter section. Nearly every farmer plants from one-fourth to 1 acre of sorghum, which is converted into sirup for home use. Garden vegetables, including sweet potatoes, are generally grown. Clover is seeded to some extent as a cover crop and also for hay. Orchard grass has been grown in a small way for a number of years and recently other tame grasses have been introduced.

Wheat yields from 7 to 25 bushels per acre, the average yield being about 10 bushels; corn from 10 to 40 bushels, averaging about 15 to 20 bushels; and oats from 20 to 50 bushels. Cotton yields ordinarily about one-third bale per acre.

Wheat land is broken with a 2 or 3 horse plow to a depth of 6 to 10 inches and worked down with a disk or drag harrow. If a rainy period follows the land is rebroken and harrowed to kill grass and weeds. Wheat is sowed with a drill any time between October 10 and November 1. Clover is frequently drilled in with the wheat, clover hay being cut the following September and the land broken for wheat again the following July. A crop of clover for hay may be cut in June before the land is broken, or it may be turned under as a green manure.

The fertilizers used for wheat and oats include 8-2-2 and 10-4 mixtures and 16 per cent acid phosphate, applied at the rate of 100 to 300 pounds per acre. For corn 8-2-2 and 8-3-3 mixtures are used, applied at the rate of 100 to 300 pounds per acre. Cotton land is given an acreage application of 200 pounds of the lower grade mixture.

The price of land of the Georgeville silt loam ranges from \$10 to \$50 an acre, the higher price prevailing in the vicinity of Southmont, Denton, and Cedar Lodge.

The Georgeville silt loam is a strong soil, capable of being built up to a high state of cultivation. Under proper methods of management its productiveness is easily maintained, but if neglected it rapidly deteriorates. On account of its rather heavy texture and compact structure, this soil is highly retentive of moisture and is well suited to wheat, oats, corn, clover, and grasses. On the other hand, its compact structure has a tendency to make the soil bake and harden upon drying. This feature can be largely overcome by the incorporation

of organic matter and by liming. The organic matter can be easily and cheaply supplied by turning under such crops as clover and cow-peas. In view of its adaptation to grain and hay crops, it would seem that cattle feeding and stock raising could be carried on profitably on this type. With the establishment of cream routes and creameries there is every reason to believe that dairying would be successful. The manure obtained from cattle feeding could be used advantageously. Deep plowing and thorough harrowing should be more generally practiced.

GEORGEVILLE SILTY CLAY LOAM.

The Georgeville silty clay loam in its typical development consists of a red to reddish-brown silty clay loam, 6 to 8 inches deep, underlain by a red silty clay which extends to a depth of 36 inches or more. Throughout the type there are a few inextensive areas, locally referred to as "gall spots," from which the surface soil has been washed, leaving the red silty clay exposed. Spots of Georgeville stony silt loam, gravelly silt loam, and silt loam, and of Alamance silt loam, too small to show on the soil map, are included with this type.

The Georgeville silty clay loam occurs in close association with the Georgeville silt loam and Alamance silt loam. The most important areas occur around Jackson Hill, between Bald Mountain and Lick Creek Church, in the vicinity of Denton, and along the eastern boundary of the county as far north as Halls Chapel School.

The surface of this type is prevailingly rolling and hilly, being somewhat less broken than that of the Georgeville silt loam. Around Reid and between Newsom and Stokes Ferry the land is badly broken and precipitous. Owing to the nature of the topography, the surface drainage of this type is well established. The compact structure of both surface soil and subsoil has a tendency to prevent the rapid downward percolation of water, however, and as a result of this the soil dries out more slowly than the sandy soils of the county.

The Georgeville silty clay loam is of considerable agricultural importance in Davidson County. Approximately 30 per cent of the type is under cultivation. The forest growth on the remainder consists of red oak, white oak, post oak, chestnut oak, shortleaf pine, maple, hickory, and dogwood.

This type is used for the production of the same crops as is the Georgeville silt loam. It is cultivated and fertilized in the same manner and responds to the same methods of improvement. The yields are slightly larger than on the silt loam.

The value of land of the Georgeville silty clay loam is somewhat higher than that of the silt loam.

ALAMANCE GRAVELLY SILT LOAM.

The surface soil of the Alamance gravelly silt loam to a depth of 10 inches consists of a yellowish-gray to almost white silt loam carrying about 20 to 35 per cent of small, angular and rounded, slaty fragments. The subsoil is a yellow silty clay loam or clay, grading into the rotten slaty rock at depths between 18 and 36 inches. In a few places the surface soil rests directly on the decomposed rock.

This type is confined to the southeastern part of the county. It is typically developed between Silver Hill Mine and Bakers Spring Church and 1 mile northwest of Jerusalem Church. The topography ranges from gently rolling to rolling and hilly. Small areas occupy knolls and ridges with steeply rolling surfaces. Owing to the uneven topography and the crumbly and comparatively shallow nature of the subsoil both surface drainage and underdrainage are good to excessive.

This type is considered less productive than the Georgeville soils. Probably not more than 15 per cent of the land is used for the production of crops. The forest growth on the remainder includes all the varieties of oak common to this section, together with some short-leaf pine, maple, and hickory.

The principal crops are wheat, corn, and oats. Small patches of cotton are grown, and a small acreage is devoted to clover. Sorghum, sweet potatoes, Irish potatoes, garden vegetables, and fruits are grown for home consumption.

The yields of all crops are similar to those obtained on the Alamance silt loam. Methods of fertilization are also the same.

As the greater part of the Alamance gravelly silt loam occurs in localities remote from railroads and markets its selling value is low. The prevailing prices range from \$5 to \$20 an acre.

Crop yields on this soil can be greatly increased by employing the methods used with good results on the Alamance silt loam.

ALAMANCE SILT LOAM.

The surface soil of the Alamance silt loam to a depth of 6 to 8 inches consists of a pale-yellow to almost white, compact silt loam, possessing a floury feel. The subsoil is a yellow, crumbly silty clay loam or silty clay. In places there is present on the surface a considerable quantity of quartz rock. In other places the rock formation giving rise to this soil is cut by dikes of diorite, and in these areas the surface soil is a loam, darker gray in color than the typical soil, and considerable iron concretions are present in both soil and subsoil. The subsoil in such areas is yellowish brown in color and

more plastic and sticky in structure than usual, resembling the sub-soil of the Iredell types. There are included in this type a few spots of Alamance gravelly silt loam too small to show on the soil map.

The Alamance silt loam is one of the most extensive soil types in the southeastern part of the county. It occurs in areas of very irregular outline, some of which attain a length of 8 or 10 miles. It is typically developed in the vicinity of Walser, Gordontown, and Hughes Siding, between High Rock and Healing Springs, and about 2 miles southwest of Jackson Hill. Many other areas occur throughout the slate belt.

The topography ranges from nearly level and gently undulating to strongly rolling and precipitous. The smoother areas of the type lie along the Carolina & Yadkin River Railway from Walser to Cid, to the south and east of Flat Swamp Mountain, and southwest of Southmont. In general the larger areas are the smoother.

The drainage is prevailingly good, although there are a few small depressions in which both surface drainage and underdrainage are poorly developed. In areas influenced by diorite the underdrainage is not as good as elsewhere.

The Alamance silt loam and gravelly silt loam are considered among the less productive of the slate soils. Probably not more than 15 per cent of the silt loam is under cultivation, the remainder supporting a forest growth consisting mainly of oak, pine, dogwood, and hickory, with some sourwood. The principal crops are corn, wheat, and oats. Cotton, red clover, and crimson clover are grown to a smaller extent. Sorghum, sweet potatoes, and Irish potatoes are produced in small patches for home use.

Corn yields from 10 to 40 bushels per acre, averaging about 15 bushels; wheat about 8 bushels, oats 20 to 50 bushels, and cotton about one-third bale.

Wheat and oat fields are given an acreage application of about 100 to 200 pounds of 14 or 16 per cent acid phosphate. Corn receives 100 to 200 pounds per acre, and cotton usually 200 pounds, of an 8-2-2 mixture.

Land of the Alamance silt loam sells for \$5 to \$30 an acre, depending on the improvements and the proximity to towns and railroads. Near Southmont small areas sell for as much as \$50 an acre, but the value of land here is influenced by the prospective growth of the town.

The productiveness of the Alamance silt loam can be greatly increased by turning under clover crops, applying barnyard manure, and breaking deeply. According to statements made by reliable farmers, the yield of corn is doubled by preceding the crop with clover. In Granville County this is considered a good tobacco soil.

DAVIDSON CLAY.

The Davidson clay, referred to as "Jersey land," consists of a reddish-brown to dull-red clay loam or clay, about 5 to 8 inches deep, underlain by a dark-red, heavy but fairly brittle clay which extends to a depth of 3 feet or more. In places a few iron concretions are present on the surface, while small particles of hornblende are conspicuous in the ditches and depressions. Occasionally diorite or diabase boulders are seen on the surface. Along the line of contact between this type and the Iredell and Mecklenburg soils the subsoil is tougher than usual, while bordering the Cecil types it is more brittle than typical.

This type is confined exclusively to the southwestern part of the county, where several large areas are encountered. It is typically developed at Hotsburg, in the vicinity of Jersey Missionary Church, and to the north and east of Linwood. It is well located with respect to railroad transportation facilities. The topography is undulating to rolling. Practically all the type occupies a favorable position for general farming. It has good natural surface drainage, while the underdrainage compares favorably with that of the Cecil types.

The Davidson clay is one of the important agricultural soils of the county. Perhaps more than 50 per cent of it is devoted to crop production. A small percentage of the cleared land has been temporarily abandoned. The natural forest growth consists mainly of white oak, red oak, and post oak, with some blackjack oak and cedar. Old-field pine constitutes the second growth.

The principal crops grown upon this soil are wheat, corn, cotton, oats, and red clover. Wheat occupies the largest acreage. Yields of this crop range from 12 to 40 bushels per acre. Corn yields 20 to 35 bushels, oats 30 to 35 bushels, cotton one-half to 1 bale, and red clover 1 to 2 tons of hay per acre.

This soil is handled in practically the same way as the Cecil clay loam. Most of the farmers sow red clover with wheat in the fall, and allow the clover to remain two years. The land is then put into cotton or grain. Wheat land usually is given an application of 350 pounds, and oat land 200 pounds, of 16 per cent acid phosphate. For cotton 200 to 300 pounds of an 8-2-2 or 8-3-3 mixture is used, except where the crop follows clover, when an application of 200 to 300 pounds of acid phosphate is made. A few farmers apply 200 pounds of acid phosphate to corn land.

Land of the Davidson clay sells for \$30 to \$75 an acre, the higher prices being obtained for well-improved land near the small towns.

The Davidson clay, like the other heavy soils of the county, requires strong work stock, heavy machinery, deep plowing, thorough pulveri-

zation, and the incorporation of organic matter to bring it to its highest efficiency in crop production. It undoubtedly is the best wheat soil in the county, and, judging from the results obtained on a similar soil near Rock Hill, S. C., there is every reason to believe that alfalfa can be profitably grown upon it. Cowpeas make an excellent growth of vines but do not fruit well.

MECKLENBURG CLAY LOAM.

The surface soil of the Mecklenburg clay loam to a depth of 6 to 10 inches consists of a reddish-brown, chocolate-brown or grayish-brown, heavy clay loam. The subsoil is a reddish-brown or brownish-yellow, stiff, impervious, plastic clay, passing into weathered diorite at any depth between 24 and 36 inches. Numerous black, roundish iron concretions are scattered over the surface and embedded in the surface soil and subsoil. On the surface of some areas there are many fragments of the parent rock, and in other places a considerable quantity of white quartz fragments, while on a few small areas there is a mixture of these rocks. This type is locally referred to as "red blackjack-oak land." Included with this type are some areas of Cecil clay loam and clay, Mecklenburg loam, Mecklenburg clay, and Iredell loam, which were too small to separate on the map.

The Mecklenburg clay loam is one of the least extensive soil types in the county. In occurrence it is closely associated with the Davidson and Iredell soils. The largest developments of the type occur at Linwood and northeast of Lexington. The topography is prevailingly undulating to rolling and hilly. Small areas around Linwood occupy slight depressions, which have a rather flat and smooth surface. The surface drainage is good, except in the depressions, but owing to the compact, impervious character of the subsoil, under-drainage is poor.

The Mecklenburg clay loam is a productive soil and, considering its small extent, of considerable agricultural importance. Approximately 65 per cent of it is under cultivation, while the remainder supports a forest growth consisting mainly of oak, hickory, pine, black gum, and maple, with some cedar, locust, and dogwood.

The principal crops are wheat, corn, cotton, oats, and clover. Cattle raising is carried on in an inextensive way. Wheat yields 12 to 40 bushels an acre, averaging about 20 bushels; corn yields 20 to 50 bushels, averaging about 25; oats yield 25 to 50 bushels, averaging about 30; clover yields 1 to 2 tons of hay per acre, and cotton one-half to 1 bale.

The systems of rotation and diversification of crops followed on this soil are very similar to those practiced on the Cecil clay and clay loam and on the Davidson clay. The best farmers make it a

rule to sow clover with wheat and follow the clover with corn, cotton or wheat when possible. As a general rule wheat land is given an acreage application of 350 pounds of 16 per cent acid phosphate. In most cases corn is not fertilized. For cotton 200 to 300 pounds per acre of acid phosphate or of an 8-3-3 mixture is used. Additional applications of kainit sometimes are made to prevent "rusting." For oats about 200 pounds of acid phosphate is used per acre.

The value of land of the Mecklenburg clay loam depends largely upon its location and improvements. Near Linwood it is held at \$40 to \$60 an acre, but some of the more remote areas can be bought for \$20 to \$40 an acre.

In order to obtain the maximum crop yields on this soil, deep breaking, thorough pulverization, and the incorporation of organic matter are essential. The greater part of this type is not easily tilled, and heavy draft stock, together with strong machinery, is necessary.

WICKHAM LOAM.

The Wickham loam consists of a gray to brown loam, about 8 to 10 inches deep, underlain to a depth of 3 feet or more by a light-red or reddish-brown fine sandy clay or heavy, stiff, silty clay to clay. The subsoil in places contains a noticeable quantity of small mica scales. On Muddy Creek the subsoil is a yellow clay mottled with red, and in other places it has a tough, compact structure. In the Horse Shoe Neck the surface soil is a brown sandy loam and the subsoil a brownish loamy sand. In other localities spots of fine sandy loam and silt loam and also patches of reddish-brown loam are encountered. Included in this type are areas of Altavista loam too small to separate on the soil map. In these the surface soil is a gray or brownish-gray loam and the subsoil is either a yellow clay or a yellowish-brown silty clay mottled with gray.

The Wickham loam is developed in small areas or strips on the second bottoms or terraces along the Yadkin River and some of the larger creeks. The topography is prevailingly level, but a part of the type occupies low ridges and knolls. Most of the land has good natural surface drainage, but in the more level areas, particularly near the upland, there are some depressions which require artificial drainage. This can be supplied by means of open ditches. All of this type lies above the level of normal overflows.

Practically all the Wickham loam is cleared and under cultivation. Corn is the principal crop grown, cotton and oats ranking next. Corn yields 20 to 30 bushels, oats 25 to 30 bushels, and cotton about one-half bale per acre. No fertilizer is used on this type.

Land of this type is seldom sold, except in conjunction with the adjoining uplands at prices ranging from \$15 to \$50 an acre.

CONGAREE FINE SANDY LOAM.

The typical Congaree fine sandy loam consists of a gray to brown fine sandy loam about 10 to 15 inches deep, underlain by a yellowish-brown fine sandy loam or fine sandy clay, which extends to a depth of 36 inches or more. Finely divided mica scales are present throughout the 3-foot section. Along the Yadkin River and a few of the larger creeks there are included with this type narrow strips of Congaree fine sand, very fine sand, silt loam, and very fine sandy loam, the latter two soils having a decidedly yellowish subsoil and containing more mica flakes than the fine sandy loam. Along the creeks in the northern part of the county very small areas occur in which the surface soil and subsoil range in texture from coarse sand to loam and in color from gray to brown. These variations in color and texture are too small to be shown on a map of the scale used.

The Congaree fine sandy loam is confined to the first bottoms of the streams in the northern part of the county and along the Yadkin River. Along the creeks the surface is nearly level, there being only a gentle slope in the direction of stream flow. In the river lowlands it is prevailingly level and flat, with low ridges and knolls. The greater part of the type is fairly well drained, but in places artificial drainage is necessary before the soil can be brought under cultivation. All of it is subject to inundation during freshets, but the water remains on the surface for only short periods.

This soil is held in high esteem and probably 90 per cent of it is under cultivation, being used mainly for the production of corn, hay, cotton, and oats. It is well suited to the production of watermelons and in some places is used for this purpose. Bordering the river west of Southmont a considerable area is planted to wheat, and an area at Hartleys Ferry is devoted to the production of tobacco. Corn yields 25 to 50 bushels, cotton about two-thirds bale, and wheat 15 to 20 bushels per acre.

Fertilizer is used only with tobacco and watermelons. Tobacco receives 500 pounds per acre of an 8-3-5 mixture.

Land of the Congaree fine sandy loam is nearly always sold in conjunction with upland soils. If sold separately it would bring about \$100 an acre.

CONGAREE SILT LOAM.

The surface soil of the Congaree silt loam is prevailingly a brown or chocolate-brown silt loam ranging in depth from 6 to 10 inches. The subsoil is a light-brown silty clay loam or silty clay extending to a depth of 36 inches or more. Distributed throughout the surface soil and subsoil are small particles of mica. In places the lower part of the subsoil shows mottlings of gray and yellow and in others it

becomes a bluish-gray silty clay at a depth of 24 to 30 inches. There are included patches of Congaree fine sandy loam too small to separate on the map.

The Congaree silt loam occurs in strips ranging in width from 100 feet to one-half mile, in the first bottoms along the streams. Some of the largest and longest strips are developed along Reedy, Muddy, Swearing, Lick, Abbotts, and Flat Swamp Creeks. The topography is level and all the type is subject to overflows during ordinarily heavy rains. Most of it is sufficiently well drained to be used for agriculture. Many swampy areas have been reclaimed by straightening the stream channels and constructing open ditches.

About 90 per cent of the Congaree silt loam is cleared, a part of this being cultivated and the remainder being used for the production of wild hay and for the summer pasturage of cattle. Corn, the only cultivated crop grown, yields ordinarily from 40 to 50 bushels, but frequently as much as 100 bushels, per acre. This is the best corn soil in the county, and one of the best in the South. Fertilizer is not used on this type.

When sold alone land of the Congaree silt loam brings \$100 or more an acre. Where it is sold with the upland soils the price ranges from \$20 to \$50 an acre.

SUMMARY.

Davidson County is situated in the west-central part of North Carolina. It embraces an area of 579 square miles, or 370,560 acres. The topography is prevailingly rolling to steeply rolling or badly broken, becoming semimountainous in the southern part. Some interstream areas have a level to undulating surface, while the narrow strips along the streams are flat. Drainage is effected through the Yadkin River and its tributaries, and is excellent. The general slope of the county is toward the southwest, as indicated by the direction of flow of the streams. In elevation the county ranges from about 500 to approximately 1,000 feet above sea level. Among the most conspicuous ridges are Flat Swamp, Bald, Wild Cat, and Grist Mountains.

The population of the county as reported by the 1910 census is 29,404, of which 72.6 per cent is rural. Lexington is the county seat and largest town in the county, with a population in 1910 of 4,163. Thomasville, with a population of 3,877, is the second largest town. Winston-Salem, Salisbury, and High Point are the principal outside markets for the products of the county.

The transportation facilities are good, the county being served by the main line of the Southern Railway and by the Winston-Salem Southbound and Carolina & Yadkin River Railways.

The climate of the county is mild and healthful. The mean annual temperature is 59.9° F., while the highest temperature ever recorded is 102° and the lowest -1°. The average annual rainfall amounts to 47.61 inches, which is well distributed throughout the year. There is a normal growing season of 195 days.

At present the main income crops of Davidson County are cotton, tobacco, and wheat, and the main subsistence crops are corn, wheat, oats, and hay. Irish potatoes, sorghum, garden vegetables, and fruits, including apples, peaches, cherries, and plums, are grown on practically every farm primarily for home use, the surplus being sold at the local markets. Watermelons, cantaloupes, strawberries, and peanuts are grown to a very small extent in the northern and western parts of the county.

The systematic rotation of crops is not general, but a majority of the farmers practice diversification of crops. Large quantities of fertilizer are used in the production of wheat, oats, cotton, and tobacco.

In 1909 there were 3,505 farms in the county, of which 77.8 per cent were operated by owners, 22 per cent by tenants, and 0.2 per cent by managers. Farm laborers are scarce. The farms range in size from 25 to 3,000 acres, the average size being 94.5 acres. The larger holdings are mostly unimproved. The farm buildings generally are neat, substantial, and commodious. Land values range from \$5 to \$100 an acre.

Davidson County lies within the Piedmont Plateau province. The soils are either residual or alluvial. In all, 22 distinct soil types, representing 10 series, are mapped in the county. The principal rock formations include those of the Carolina slate belt, besides porphyritic granites, binary granites, and diorites. The rocks of the Carolina slate belt give rise to the Georgeville and Alamance soils, the porphyritic granites to the Appling and Cecil series, the binary granites to the Durham soils, and the diorites to the Davidson, Mecklenburg, and Iredell series. The alluvial soils on the first and second bottoms along the streams are classed with the Congaree and Wickham series, respectively. The Cecil sandy loam, Durham sandy loam, and Georgeville silt loam are the most extensive soil types of the county.

The soils of Davidson County compare favorably with those of any of the other Piedmont counties of North Carolina. They are capable of being built up to a state of high productiveness and if properly handled their productiveness can be easily maintained. There are large unused tracts of land awaiting development.

[PUBLIC RESOLUTION—No. 9.]

JOINT RESOLUTION Amending public resolution numbered eight, Fifty-sixth Congress, second session, approved February twenty-third, nineteen hundred and one, "providing for the printing annually of the report on field operations of the Division of Soils, Department of Agriculture."

Resolved by the Senate and House of Representatives of the United States of America in Congress assembled, That public resolution numbered eight, Fifty-sixth Congress, second session, approved February twenty-third, nineteen hundred and one, be amended by striking out all after the resolving clause and inserting in lieu thereof the following:

That there shall be printed ten thousand five hundred copies of the report on field operations of the Division of Soils, Department of Agriculture, of which one thousand five hundred copies shall be for the use of the Senate, three thousand copies for the use of the House of Representatives, and six thousand copies for the use of the Department of Agriculture: *Provided*, That in addition to the number of copies above provided for there shall be printed, as soon as the manuscript can be prepared, with the necessary maps and illustrations to accompany it, a report on each area surveyed, in the form of advance sheets, bound in paper covers, of which five hundred copies shall be for the use of each Senator from the State, two thousand copies for the use of each Representative for the congressional district or districts in which the survey is made, and one thousand copies for the use of the Department of Agriculture.

Approved, March 14, 1904.

[On July 1, 1901, the Division of Soils was reorganized as the Bureau of Soils.]

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